

# SONY

High Definition Video System

## Digital **HDVS**

**HDCAM** HDW-500

Digital





**T**he HDW-500 Digital HD Studio VTR brings High Definition video recording to the studio and edit bay as the result of over 20 years of Sony research into HD technology. In 1981, Sony introduced the High Definition Video System (HDVS) providing film-like picture quality with conventional VTR operations. In 1984, Sony unveiled the industry's first analog HD 1-inch VTR product which was followed in 1989 by the world's first all-digital 1-inch HD VTR, the industry leading HDD-1000. Now, based on the newly developed HDCAM format, Sony is bringing advanced, cost-effective 1/2-inch tape technology to the HD market with the new HDW-500 HD Studio VTR.

The HDW-500 inherits all of the operational advantages, robustness, and compactness of the well accepted Digital BETACAM format in addition to many new HD functions, particularly its superb high definition picture quality and its convenient HD SDI interface capability to integrate with other HDVS equipment. The HDW-500 incorporates Sony's sophisticated HD digital compression and digital processing technologies, enabling a longer recording time of 124 minutes with an L cassette and 40 minutes with an S cassette. In order to easily integrate into conventional SDTV systems and enable users to upgrade smoothly to high-definition production, the HDW-500 is a dual format VTR providing both digital HDTV and SDTV outputs. Thanks to its sophisticated circuitry design, the HDW-500 maintains the same compact size as that of Digital BETACAM equipment and also retains the conventional Sony interfaces to ensure flawless communication with other SDTV video equipment. Now that the U.S. video production industry is rapidly evolving toward all-digital, Standard Definition or High Definition television, with the new HDW-500 broadcasters now have an HD studio VTR that will record, play back and edit those pristine widescreen images using ergonomic controls already familiar to most operators. The era of digital production is upon us, and the HDW-500 is leading the way.



# Benefits



**T**he HDW-500 provides superb high definition picture quality with a familiar, intuitive BETACAM-style operation.

**S**ony's Flexicart multi-cassette system for automatic recording/payout has the same body size and cassette size as BETACAM tapes.



**40min**

**124min**

**A** longer recording/playback time of 124 minutes on an L cassette and 40 minutes on a S cassette.

**D**ual format outputs enables both HDTV and SDTV production.

**T**he HDW-500 offers an optional 480i down converter to help support the SMPTE standard 292M.

**T**he HDW-500 interfaces for interconnection with other HD drivers.



D-SUB 9-pin  
D-SUB 15-pin  
D-SUB 25-pin  
D-SUB 50-pin  
(option)

**HDW-500**  
with HKDV-501 and  
HKDV-506



(1125/60)  
(1125/59.94)  
(525/59.94)

**HD-SDI**

**HDTV  
Equipment**

**SDI (D1/D2)**

**SDTV  
Equipment**

**SDTI**

**Disk Recorder  
A/V Server**

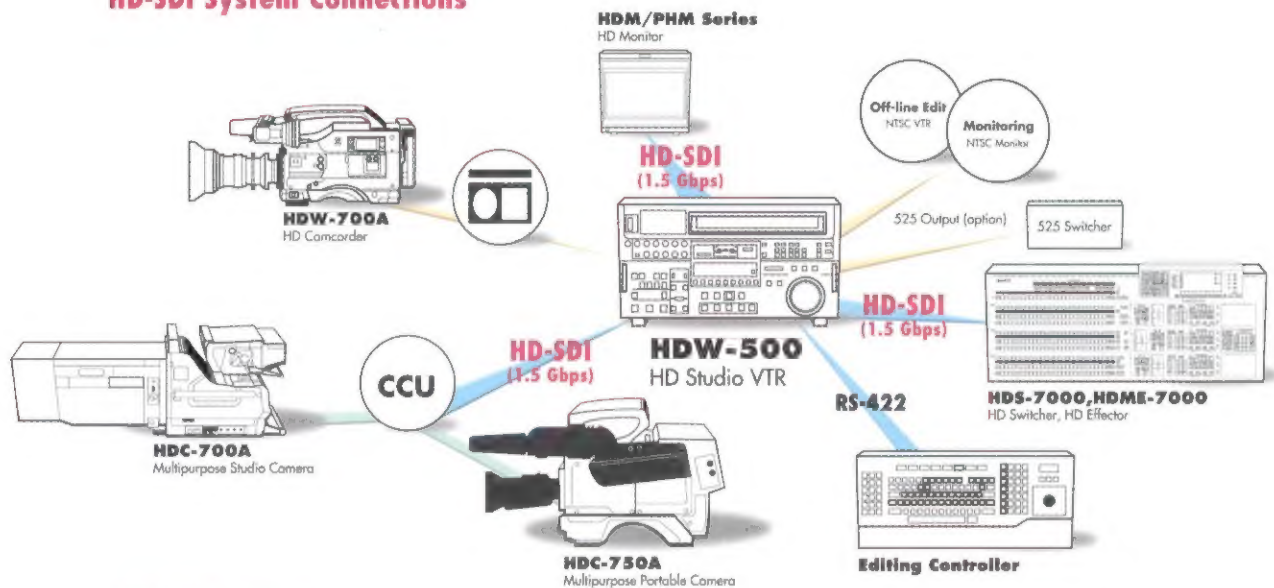


# Features

## HDCAM format

A refined tape format based on Digital BETACAM technology has been adopted for HDCAM equipment's state-of-the-art HD recording technology. Utilizing the HDCAM format's new high-density recording capability and its newly developed HD Digital Compression Technology, the HDW-500 provides superb picture quality and a long recording time 124 minutes per one L cassette and 40 minutes per one S cassette, which contributes to lower running costs.

## HD-SDI System Connections



## HDCAM tape

The HDCAM tape has been designed to ensure the reliable recording of the HDCAM format's recording wavelength of 0.49  $\mu\text{m}$ . To achieve this, Sony created new metal magnetic particles, that are half the size of those used in Digital BETACAM tape. By implementing an extremely smooth tape surface with increased density of this ultrafine magnetic particles through a new calendering technology, the HDCAM tape with a C/N (Carrier to Noise Ratio) of 45 dB has been developed to ensure high-integrity digital HD recording in the field.

## Advanced control panel

The HDW-500 has incorporated as a standard an advanced control panel with built-in EL display for menu setting. A removable memory card designed to be inserted into the control panel enables up to eight sets of VTR setup parameters, each containing about 100 cue points to be stored.

By adopting the simple and highly reliable HD SDI (High Definition Serial Digital Interface according to SMPTE 292M standard), the HDW-500 facilitates a convenient 1920 x 1080 pixel baseband digital interface with other video equipment via a single BNC cable.

The optional HKDV-502 line converter board provides superb quality variable speed Dynamic Tracking playback and bi-directional vertical filtering between the two active line standards of 1080 (SMPTE 274M) and 1035 (SMPTE 260M/240M).

The diagram illustrates a central SDTI network connecting various video equipment. The central hub is a **MAV Server**. It is connected via orange SDTI lines (270 Mbps) to the following devices:

- HDW-500 with HDV-500** (top center)
- HDW-500 with HDV-500** (bottom center)
- MAV Disk Recorder** (top left)
- PFV-HD Series HD Interface Unit** (bottom left)
- DVS-V Series Digital Router** (top right)
- PFV-HD Series HD Interface Unit** (bottom right)

Peripheral connections are shown with blue HD-SDI lines (1.5 Gbps):

- HDW-500 with HDV-500** connects to **HD-SDI** (top right).
- HDW-500 with HDV-500** connects to **HD-SDI** (bottom right).
- MAV Disk Recorder** connects to **HD-SDI** (top left).
- PFV-HD Series HD Interface Unit** connects to **HD-SDI** (bottom left).
- DVS-V Series Digital Router** connects to **HD-SDI** (top right).
- PFV-HD Series HD Interface Unit** connects to **HD-SDI** (bottom right).
- HD-SDI** lines also connect to **HD-SDI** (top right), **HD-SDI** (bottom right), and **HD-SDI** (top left).

Legend:

- SDTI (270 Mbps)** (Orange line)
- HD-SDI (1.5 Gbps)** (Blue line)

The HDW-500 can operate in record and/or playback at either 59.94 Hz or 60 Hz field rates, selected from the control panel. It also can be synchronized with the 525 black burst signal (59.94 Hz).

With an optional HKDV-501 SDTV down converter board installed, the HDW-500 provides a variety of SDTV outputs in addition to HDTV outputs. The SDTV outputs include three SDI interfaces and one analog composite interface in addition to SDTV sync. The SDI outputs are either D-1 component SDI or D-2 composite SDI selectable through a menu operation from the control panel of the HDW-500.



# Features

## Digital video controller—HKDV-503

The output video signals can be adjusted from an optional HKDV-503 digital video controller or from the local control panel. Through this adjustment the basic video/sync parameters of HD output, SD output, and image enhancer can be set up independently.

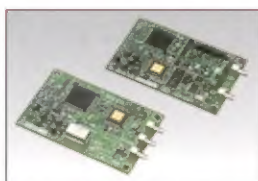
## Other advantages

HDCAM technology allows the HDW-500 to retain the same easy-handling operation while maintaining the compact size and light weight of a Digital BETACAM VTR. The HDW-500 is mountable in any standard 19-inch rack.

# Optional accessories



HD-SDS Down Converter Board  
**HKDV-501**



HD Dubbing Interface Board  
**HKDV-504**

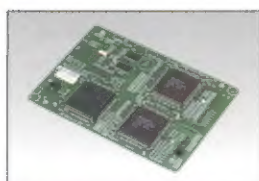


HD Digital Video Controller  
**HKDV-503**

HD Line Converter Board  
**HKDV-502**

SDTI Board  
**HKDV-506**

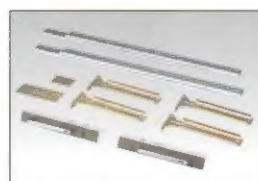
Remote Control Cable 9-pin/15-pin  
(2m, 5m, 10m, 30m)  
**RCC-1502H/1505H/  
1510H/1530H**



HD Editing Processor Board  
**HKDV-505**



50-pin Parallel Remote Kit  
**BKDW-509**



Rock Mount Kit  
**RMM-110**



HDCAM Video Cassette  
**BCT-124HDL/64HDL/  
40HD/22HD**



Video Head Cleaning Cassette  
**BCT-HD12CL**

# Supplied accessories

Power cord (1)  
RCC-5G 9-pin remote control cable (1)  
PSW 4 x 16 screws for rack mounting (4)

IC memory card (1)  
Operation manual (1)  
Maintenance manual part-1 (1)

# Specifications

## HDW-500

### (General)

<b>Signal interface</b>	
<b>standard:</b>	SMPTE 292M (Uncompressed serial digital HD SDI)
<b>Power requirements:</b>	AC 90 V to 265 V, 43 Hz to 63 Hz
<b>Power consumption:</b>	230 W (w/down converter board integrated)
<b>Operating temperature:</b>	+5°C to +40°C (+41°F to +104°F)
<b>Storage temperature:</b>	-20°C to +60°C (-4°F to +140°F)
<b>Humidity:</b>	Less than 80% (relative humidity)
<b>Dimensions (Approx.):</b>	427(W) x 237(H) x 520(D) mm (16 7/8 x 9 3/8 x 20 1/2 inches)
<b>Mass (Approx.):</b>	35 kg (77.16 lbs)
<b>Dynamic tracking range:</b>	-1 to +2 times normal playback speed
<b>Servo lock time:</b>	1.0 sec or less
<b>Load/unload time:</b>	6 sec or less

### (Video)

<b>Quantization:</b>	Input/output Interface: 10 bits
<b>Compression format:</b>	DCT Intra-frame 8 Bit data reduction

### (Audio)

<b>Sampling frequency:</b>	48 kHz
<b>Frequency response:</b>	20 Hz to 20 kHz
<b>Quantization:</b>	20 bits/sample
<b>Number of channels:</b>	4 channels (Uncompressed)
<b>Wow and flutter:</b>	Below measurable limit



HDW-500 Rear panel

### (Input/Output connector)

#### (Video)

##### - Input -

<b>Ref Sync (1125/60):</b>	BNC (loop-through) x 1
<b>Ref Sync (1125/59.94):</b>	BNC (loop-through) x 1
<b>Ref Sync (525/59.94):</b>	BNC (loop-through) x 1
<b>HD SDI (1.5 Gbps):</b>	BNC x 1
<b>Dubbing (1.5 Gbps):</b>	BNC x 1 (with HKDV-504 installed)
<b>Dubbing (270 Mbps)</b>	BNC x 1 (with HKDV-506 installed)

##### - Output -

<b>Sync (1125)</b>	BNC x 2
<b>HD SDI (1.5 Gbps)</b>	BNC x 4 (including one with or without character insertion)
<b>Dubbing (1.5 Gbps)</b>	BNC x 1
<b>525 system (option)</b>	
<b>Sync (525)</b>	BNC x 1
<b>SDI (D1/D2)</b>	BNC x 3 (including one with or without character insertion)

#### Analog composite:

BNC x 1 (with or without  
character insertion)

### (Audio)

##### - Input -

<b>Digital audio (AES/EBU):</b>	BNC x 2 (loop-through)
<b>Analog audio:</b>	LR x 4
<b>Cue audio:</b>	XLR x 1
<b>Time code:</b>	XLR x 1

##### - Output -

<b>Digital audio (AES/EBU):</b>	BNC x 2
<b>Analog audio:</b>	XLR x 4
<b>Cue audio:</b>	XLR x 1
<b>Time code:</b>	XLR x 1
<b>Audio monitor (L/R):</b>	XLR x 2
<b>Headphone:</b>	Stereo jack

### (Remote)

<b>Control panel:</b>	D-sub 15-pin
<b>RS-422A in:</b>	D-sub 9-pin
<b>RS-422A out:</b>	D-sub 9-pin
<b>RS-232C:</b>	D-sub 25-pin
<b>Remote parallel</b>	
<b>I/O (option):</b>	D-sub 50-pin
<b>Video control:</b>	D-sub 9-pin